

Physiology of First Year

Physiology

Final Exams

June/ 1991 Marks

All questions are to be attained:

:

1-

a- Discuss the various factors which affect cardiac contractility. (8)

b- Give an account of the mechanism of exchanges of water. Electrolyte And crystalloid through the capillary wall (Bulk flow). (8)

c- What are the variations, which affect the net exchange of fluids? (9)

2-

a- Give an account of the functions of the medullary pressor area. What are the factors which increase its activity. (8)

b- Discuss the mechanism and factors which affect gas exchange in the lung. (8)

c- Give an account of the non-chemical control of respiration. (9)

3-

a- Give an account of the types and functions of the plasma protein. (8)

b- Describe the effects of an antigen coming in contact of lymphocyte for the first time. (9)

c- Give an account of the distribution and functions of the preganglionics in cranial nerves. (8)

4-

a- Give an account of the membrane channels for ions and their role at rest and after excitation of the nerve. (8)

b- Described the reflexes for the nervous regulation of the gastrointestinal system. (8)

c- Give an account of the functions and mechanism of secretion of the oxyntic cells of the gastric glands. (9)

the "D" antigen. (8)

d- Enumerate the types of receptors present in the autonomic nervous system. How can each receptor be stimulated and blocked

4-

a-Give an account of the structure of the cell membrane. How can this structure contribute to the mechanisms of membrane transport? (8)

b- Give an account of the molecular theory of muscle contraction. what are the source of energy for this contraction? (8)

C- Give an account of the mechanisms which increase gastric secretion in response to meal.

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May 1993 Marks

PHYSIOLOGY

All questions are to be answered:

:

1- Discuss the mechanism of neuro-muscular transmission. What

are its properties? (10)

2- Give an account on platelets functions. (10)

3- give fig' account on effect of stimulation of greater splanchnic nerve. (10)

4- With help of diagram describe the sequence of events in

cardiac cycle during late diastole (10)

5- State and explain Poisenille's low. How it is applied to

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cardiovascular system? (10)

6- what are the effects of decreased renal blood flow (renal

ischemia) on arterial blood pressure? (10)

7- Discuss the ventilatory response to different H⁺ ions concentration in blood and what is the mechanism of action of H⁺ ions?

8-What is hypoxial? Enumerate its types and discuss hypoxic hypoxia. (10)

9- Discuss factors affecting glumeriolar filtration rat (10)

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10- Compare and contrast reabsorption in proximal and distal convoluted tubule. (10)

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PHYSIOLOGY

Answer the following 2 questions:

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- 1- Give an account on functions of sympathetic nervous system on abdominal and pelvic viscera. (10)
- 2- Discuss the functions of Plasma proteins. (10)
- 3- Give an account on the mechanism of neuro-muscular transmission and its properties. (10)
- 4- Draw the action potential of a single ventricular muscle fiber. Discuss the ionic bases of its different phases.
- 5- Draw a diagram to show the different changes that occurs in the cardiac cycle during ventricular systole. Discuss the isometric contraction phase only. (10)

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- 6- What are the roles of circulating vasoconstrictor substance in regulation of the diameter of arterioles (and blood) pressure. (10)
- 7- What are the causes and functions of the intrapleural pressure.
- 8- Explain the chloride shift phenomenon. (10)
- 9- what is the volume of glomerular filtrate. Discuss the forces needed for its formation.
- 10- How can the kidneys readjust the pH of the extracellular fluid (ECF) when it becomes abnormal (acidosis and alkalosis).

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June 1995

PHYSIOLOGY

Answer the following 2 questions:

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1. What are the sites of secretion of AcetylCholine in autonomic nervous system ? Give an account on its functions on pelvic viscera. (10)
2. Define the resting membrane potential and discuss its causes.
3. A patient with total gastrectomy will develop a specific type of vitamin deficiency, what is this vitamin and its importance in erythropoiesis? Discuss the mechanism of its absorption.
4. What is the relation between timed vital capacity (FEV) and vital capacity. Discuss the factors affecting vital capacity.
5. Enumerate types of Hypoxia. Give full account on Hypoxic Hypoxia (characters, symptoms and causes). (12)
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6. What is meant by plasma clearance? How it is used in measuring renal plasma flow?
7. Give an account on factors affecting glomerular filtration rate. (14)

8. With help of diagram give an account on changes that occur during isometric contraction phase of cardiac cycle. (10)

9. Discuss the factors affecting filtration across the capillary wall. How does they act to regulate the blood pressure (intermediate

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May Exam 1996

All questions are to be attempted:

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- 1 .Describe parasympathetic supply to the head and mention their functions. (12)
2. Explain the sequence of events during neuromuscular transmission.
3. Discuss Rh incompatibility and how to avoid it
4. Draw a labeled diagram of the normal E C G. Mention the cause of each wave and its timing in the cardiac cycle. (10)
- 5.Describe the role of baroreceptors in regulation of arterial blood pressure. (10)
- 6.What are the factors that regulate the coronary blood flow. (10)
- 7.Discuss hypoxic hypoxia and histotoxic hypoxia. (12)

8.Explain how can tidal Co_2 be buffered., (12)

9. Explain how kidney fights acidosis. (12)

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SEPT. ExAM.,1997

Answer the followjn2 questions

1 - Give an account on origin and functions of pelvic autonomic . N.S.

2- write what you know about functions of the cell membrane proteins.

3- Give an account on types of plasma proteins and their functions.

4- Discuss the following :

a-factors affecting excitability of the nerve.

b-The sequence of events and properties of neuromuscular transmission.

5-What does starling low state? With help of diagrams apply this low to both

skeletal and cardiac muscles contractions .

6-Define cardiac output. Discuss its control and regulation in brief

7-Discuss the following:-

a-Causes of -ve intrapleural pressure and its changes the respiratory cycle.

b- Chloride-shift phenomenon and its importance.(10)

8-Discuss mechanism of glucose reabsorption by the renal

tubules. (10)

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23/5/1998

Physiology

1- Answer the following question, (Biophysics.:

a- what does starling law states? Discuss its application in cardiac muscle.

b- Define osmosis and explain its importance in cell membrane

11- Give an account on only 3 of the following 4 questions, both (A) & (B) must be from the same question:

(2)

a. Describe the mechanism of acid secretion by the stomach.

b. Discuss metabolic changes in skeletal muscle during and after the end of muscular exercise.

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b. Enumerate types and functions of postganglionic sympathetic receptors. How can each receptors be stimulated and blocked?

(4)

- a. Discuss the various functions of platelets in hemostasis.
- b. Describe factors affecting nerve excitability.

(5)

- a. Describe the development and functions of cellular immunity.
- b. Give an account on functions of sympathetic nervous system on abdominal and pelvic viscera.

III- Answer only 4 of the following 5 questions:

(6) Discuss events occurring in both isometric contraction and isometric relaxation phases in the cardiac cycle.

(7) Discuss mechanism of bulk flow at capillary site.

(8) Draw cardiac out-put curves. Explain the relation between right atrial pressure and C.O. under different condition.

(9) Discuss the dead space: its types, significance and methods of measurement.

(10) Enumerate types of hypoxia. Give full account on each.

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May 1999

1-write what you know about definition of ultra sound. Discus Doppler principles and its applications.

2-define compliance of the elastance destinsibility and plasticity discuss the compliance urinary bladder.

3-draw and describe the action potential of the nerve and its ionic basis.

4-Discuss the neuromuscular transmission and its properties.

5- Discuss functions of blood platelets.

6-Discuss sympathetic innervation and functions on abdominal and pelvic organs

7-Discuss blood groups and , effects of incompatible transfusion.

8-Describe the normal ECG and its components with special reference to its significance

9-Discuss nervous control of the diameter of arterioles.

10- Discuss factors affecting coronary blood flow.

11-Discuss O₂ carriage in the blood . draw and describe the O₂ dissociation curve.

12-Describe the respiratory centers and show how they control normal respiration.

13-Write short notes on:

a) intrapleural pressure.

b) Dyspnea .

c) Cyanosis.

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May Exam 2000 Cairo University

Time allowed: 50 minutes

First Year

Kidney

Faculty of Medicine

25/5/2000

PHYSIOLOGY

M.C.Qs EXAMINATION

Important Remarks:

Remarks:

- Write your name and seat number on the slip paper

- Use ink in your answers

Read well each statement and mark either 14) if correct, or (X) if wrong on the right side of the paper using: one mark for each

Question:

:

1. The intercellular gap Junctions

(a) allow the transfer of ion from one cell to another through the extracellular fluid.

(b)allow rapid propagation of electrical activity.

(c)are thickened areas between two adjacent cells.

(d) are formed of the connexons that surround a channel in the

membrane. (

2. Concerning the autonomic nervous system:

(a)the skin receives parasympathetic nerve, fibers. ()

(b)the postganglionic sympathetic nerve fibers are unmyelinated . (

(c)Preganglionic parasympathetic fibers to abdominal viscera have cell () bodies in the thoracic of the spinal cord.

(d) there are parasympathetic vasodilator fibers to arterioles of skeletal (muscles.

3. Parasympathetic nerve:

(a)Have longer postganglionic than preganglionic fibers. ()

(b)Stimulation causes sweat secretion. ()

(c)Stimulation causes the spleen to contract. ()

(d) stimulation causes ejaculation of semen.()

4. Alpha adrenoceptors:

(a)stimulation increases rate and force of contraction of the heart.

(b)stimulation produces vasoconstriction of skin blood vessels.

(c)produce their by increasing intracellular cAMP..

(d) blockade causes a reduction in bronchus diameter.

5. Nicotinic receptors:

(a) are found in effector cells stimulated by postganglionic parasympathetic fibers. ()

(b) are stimulated by low doses of acetylcholine . ()

are stimulated by low doses of acetylcholine . () (c) can be blocked by atropine. () (d) are important in neuromuscular transmission. ()

6. Preganglionic fibers in the oculomotor nerve:

fibers in the oculomotor nerve:

(a) arise from the ciliary ganglion. ()

(b) activate the postganglionic fibers supplying the ciliary muscle in the eye.()

(c) release noradrenaline at their endings. ()

(d) activate postganglionic fibers which increase secretion in salivary glands.()

7. Concerning the effects of circulating catecholamines:

- (a) noradrenaline has a greater stimulating effect on cardiac muscle than adrenaline. ()
- (b) adrenaline has a more marked metabolic effect than noradrenaline. ()
- (c) adrenaline has a greater .constrictor effect on blood vessels of skeletal muscles than noradrenaline. ()
- (d) they exert effects similar to sympathetic stimulation that last for very short time. ()

8. Concerning the nerve fibers:

- (a) the local response is accompanied by absolute refractory period. ()
- (b) they accommodate when a gradually increasing threshold stimulus is applied. ()
- (c) the magnitude of action potential does not change as it is conducted. ()
- (d) compound action potential is a graded potential. ()

9. The resting membrane potential:

- (a) is primarily near K^+ equilibrium potential. ()
- (b) is about ~ 100 mV in medium sized neurons.. ()
- (c) if decreased causes an increase in nerve excitability. ()
- (d) is due to net inflow of Na^+ ()

10. Concerning the voltage gated sodium channels in the nerve:

nerve:

- (a) they have -inactivation gates on the outer surface of the membrane and activation gates on the inner side. ()
- (b) When the membrane is polarized , the inactivation gates are closed. ()
- (c) at the firing level the activation gates open. ()
- (d) depolarization stops at +35 mV because activation gates close after inactivation gates. ()

11. In the skeletal muscles:

- (a) the length of the A band decreases during muscle shortening.
- (b) H zone contains only myosin.
- (c) Ryanodine Ca^{2+} release channels are present on the T tubules.
- (d) cycling of cross bridges stops when Ca^{2+} bind to troponin.

12. In skeletal neuromuscular Junctions:

- (a) the motor end plate is the motor nerve terminal. ()
- (b) spontaneous potentials may be recorded in the motor nerve terminals. ()

- (c) transmission is facilitated by neostigmine. (
- (d) transmission shows a delay about 5 msec. (

13. The absolute refractory period of a nerve fiber:

- (a) is longer than that of cardiac muscle ()
- (b) occurs during increased permeability to Na ()
- (c) lasts throughout the action potential ()
- (d) has a duration about 10 msec. ()

14. Smooth muscles:

- (a) have T tubules that is formed as an invagination of muscle membrane.(
- (b) have a slow action potential that lasts 50 milliseconds.(
- (c) have few voltage gated sodium channels.
- (d) contraction needs active calmoduline which activates the myosin phosphatase ()

15. Blood platelets:

- (a) are normally more numerous than white cells. ()
- (b) dense granules contain factor XIII. ()

(c) activation is enhanced by thromboxane A₂. ()

(d) aggregation is inhibited by aspirin which stimulates the cyclooxygenase enzyme. ()

16. Concerning blood clotting:

(a) blood clotting is prevented in vitro when dicumarol is added. ()

(b) factor VIII deficiency affects the extrinsic pathway for blood clotting. ()

(c) factor VII needs vitamin K for its formation by the liver. ()

(d) factor VII deficiency causes petechial hemorrhages in the skin. ()

17. Concerning iron:

(a) the greatest percentage of ferritin is found in bone marrow. ()

(b) transferrin concentration increases in iron deficiency anemia. ()

(c) the total amount of iron in the body is 4 gms. ()

(d) ferric iron is absorbed in the upper part of the small intestine. ()

18. Red blood cells:

(a) deform as they pass through the capillaries ()

(b) breakdown leads to formation of bile pigments. ()

(c) formation is decreased in cases of atrophy of gastric mucosa. ()

(d) formation is decreased by beta — adrenergic stimulants. ()

19. Helper T lymphocytes (CD ~ cells):

(a) are the most numerous type of the T cells. ()

(b) recognize antigens accompanied by MHC class I. ()

(c) of the type Th — 2 stimulate the proliferation of cytotoxic T cells ()

(d) Can activate macrophages to become more phagocytic. ()

20. The complement system,

(a) can be activated by properdin that needs the presence of antibodies ()

(b) activation causes chemotaxis of leucocytes to the site of antigen ()

(c) activation stimulates the cytotoxic T lymphocytes ()

(d) activation causes opsonization of bacteria ()

21.Rejection of a transplanted organ:

- (a) Is carried out by the cytotoxic T lymphocytes. (
- (b) Is aggravated by administration of glucocorticoids . (
- (c) Is made less by irradiation of the lymphoid tissue. (
- (d) Is due to a decrease in the number of circulating lymphocytes (

22. During inspiration:

- (a) lung expansion is assisted by the surface tension forces in the alveoli.()
- (b) lung expansion begins when intrapleural pressure falls below atmospheric ()
- (c) lung expansion ends when the intrapulmonary pressure falls to atmospheric (
- (d) the alveoli at the base of the lung are better ventilated than those at the apex

23. Compliance of the lungs is:

- (a) greater than the compliance of the lungs and the thorax together.
- (b) greater in standing than in recumbent subjects (c) about 0.1 L/cm water pressure
- (d) greater during expiration than during inspiration

24. Dead space:

- (a) removes all particles from inspired air before it reaches the alveoli (
- (b) decreases when blood catecholamine level rises.
- (c) increases during inspiration
- (d) volume equals about one third the tidal volume

25. Concerning the carriage of gasses by the blood:

- (a) a rise in PCO_2 increases the oxygen carrying capacity of blood.
- (b) more CO_2 is carried by oxyhemoglobin than reduced hemoglobin. (
- (c) Hb% saturation with oxygen does not vary with the Hb content. (d) CO_2 is carried mainly in blood attached to hemoglobin

26. The peripheral chemoreceptors :

- (a) have a high blood flow per unit mass of tissue

(b)are stimulated by any form of hypoxia

(c) when stimulated causes an increase in arterial blood pressure

(d)are found in the medulla region of the brain

27- During acclimatization to high altitude:

a- Excretion of bicarbonate increases.

b- Pulmonary arterial blood pressure rises.

c- P50 of the O₂ dissociation curve of hemoglobin decreases.

d- Viscosity of blood increases.

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- c- Is higher at the apex than at the base of lung. ()
- d- Mismatching through the lungs is partly due to the higher transmural pressure at the apical than the basal alveoli. ()

31- The volume of air contained in the lungs:

- a- After maximal expiration is the residual volume. ()
- b- After normal expiration is the expiratory reserve volume. ()
- c- After maximal inspiration from functional residual capacity is the inspiratory capacity. ()

d- After normal expiration is the total lung capacity. ()

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a- About 5% of the cardiac output. ()

b- Decreased by sympathetic stimulation mediated by beta adrenergic receptors. ()

c- Decreased during exercise. ()

d- About 650 ml/mm. ()

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a- Is partially reabsorbed by proximal convoluted tubules. ()

b- Is reabsorbed by counter transport with Na⁺ at luminal border of PCT. ()

c- Crosses the basolateral border by facilitated diffusion. ()

d- Reabsorption at the basolateral border of PCT is inhibited by phloridzin. ()

- Write your name and seat number on the slip paper

- Use ink in your answers

Read well each statement and mark either (T) if correct, or (F) if wrong on the right side of the paper using: one mark for each

Question:

:

1. The intercellular gap Junctions

(a) allow the transfer of ion from one cell to another through the extracellular fluid.

(b) allow rapid propagation of electrical activity.

(c) are thickened areas between two adjacent cells.

(d) are formed of the connexons that surround a channel in the

membrane. (

2. Concerning the autonomic nervous system:

(a) the skin receives parasympathetic nerve fibers. ()

(b) the postganglionic sympathetic nerve fibers are unmyelinated. (

(c) Preganglionic parasympathetic fibers to abdominal viscera have cell () bodies in the thoracic of the spinal cord.

(d) there are parasympathetic vasodilator fibers to arterioles of skeletal (muscles.

3. Parasympathetic nerve:

(a) Have longer postganglionic than preganglionic fibers. ()

(b) Stimulation causes sweat secretion. ()

(c) Stimulation causes the spleen to contract. ()

(d) stimulation causes ejaculation of semen. ()

4. Alpha adrenoceptors:

(a) stimulation increases rate and force of contraction of the heart.

(b) stimulation produces vasoconstriction of skin blood vessels.

(c) produce their effect by increasing intracellular cAMP..

(d) blockade causes a reduction in bronchus diameter.

5. Nicotinic receptors:

(a) are found in effector cells stimulated by postganglionic parasympathetic fibers. ()

(b) are stimulated by low doses of acetylcholine. ()

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6. Preganglionic fibers in the oculomotor nerve:

fibers in the oculomotor nerve:

- (a) arise from the ciliary ganglion. ()
- (b) activate the postganglionic fibers supplying the ciliary muscle in the eye.()
- (c) release noradrenaline at their endings. ()
- (d) activate postganglionic fibers which increase secretion in salivary glands.()

7. Concerning the effects of circulating catecholamines:

- (a) noradrenaline has a greater stimulating effect on cardiac muscle than adrenaline. ()
- (b) adrenaline has a more marked metabolic effect than noradrenaline. ()
- (c) adrenaline has a greater .constrictor effect on blood vessels of skeletal muscles than noradrenaline. ()
- (d) they exert effects similar to sympathetic stimulation that last for very short time. ()

8. Concerning the nerve fibers:

- (a) the local response is accompanied by absolute refractory period. ()
- (b) they accommodate when a gradually increasing threshold stimulus is applied. ()
- (c) the magnitude of action potential does not change as it is conducted. ()
- (d) compound action potential is a graded potential. ()

9. The resting membrane potential:

(a) is primarily near K^+ equilibrium potential. ()

(b) is about ± 100 mV in medium sized neurons.. ()

(c) if decreased causes an increase in nerve excitability. ()

(d) is due to net inflow of Na^+ ()

10. Concerning the voltage gated sodium channels in the nerve:

nerve:

(a) they have inactivation gates on the outer surface of the membrane and activation gates on the inner side. ()

(b) When the membrane is polarized , the inactivation gates are closed. ()

(c) at the firing level the activation gates open. ()

(d) depolarization stops at +35 mV because activation gates close after inactivation gates. ()

11. In the skeletal muscles:

(a) the length of the A band decreases during muscle shortening.

(b) H zone contains only myosin.

(c) Ryanodine Ca^{2+} release channels are present on the T tubules.

(d) cycling of cross bridges stops when Ca^{2+} bind to troponin.

12. In skeletal neuromuscular Junctions:

(a) the motor end plate is the motor nerve terminal. (

(b) spontaneous potentials may be recorded in the motor nerve terminals.(

(c) transmission is facilitated by neostigmine. (

(d) transmission shows a delay about 5 msec. (

13. The absolute refractory period of a nerve fiber:

(a) is longer than that of cardiac muscle ()

(b) occurs during increased permeability to Na^+ ()

(c) lasts throughout the action potential ()

(d) has a duration about 10 msec. ()

14. Smooth muscles:

(a) have T tubules that is formed as an invagination of muscle membrane.(

(b) have a slow action potential that lasts 50 milliseconds.(

(c) have few voltage gated sodium channels.

(d) contraction needs active calmoduline which activates the myosin phosphatase ()

15. Blood platelets:

(a) are normally more numerous than white cells. ()

(b) dense granules contain factor XIII. ()

(c) activation is enhanced by thromboxane A₂. ()

(d) aggregation is inhibited by aspirin which stimulates the cyclooxygenase enzyme.()

16. Concerning blood clotting:

(a).blood clotting is prevented in vitro when dicumarol is added. ()

(b)factor VIII deficiency affects the extrinsic pathway for blood clotting. ()

(c) factor VII needs vitamin K for its formation by the liver. ()

(d) factor VII deficiency causes peticheal hemorrhages in the skin. ()

17.Concerningiron:

- (a) the greatest percentage of ferritin is found in bone marrow. ()
- (b) transferrin concentration increases in iron deficiency anemia. ()
- (c) the total amount of iron in the body is 4 gins. ()
- (d) ferric iron is absorbed in the upper part of the small intestine. ()

18. Red blood cells:

- (a) deform as they pass through the capillaries ()
- (b) breakdown leads to formation of bile pigments. ()
- (c) formation is decreased in cases of atrophy of gastric mucosa. ()
- (d) formation is decreased by beta — adrenergic stimulants. ()

19. Helper T lymphocytes (CD ~ cells):

- (a) are the most numerous type of the T cells. ()
- (b) recognize antigens accompanied by MHC class I. ()
- (c) of the type Th — 2 stimulate the proliferation of cytotoxic T cells ()
- (d) Can activate macrophages to become more phagocytic. ()

20. The complement system,

(a) can be activated by properdin that needs the presence of antibodies ()

(b) activation causes chemotaxis of leucocytes to the site of antigen ()

(c) activation stimulates the cytotoxic T lymphocytes ()

(d) activation causes opsonization of bacteria ()

21.Rejection of a transplanted organ:

(a) Is carried out by the cytotoxic T lymphocytes. (

(b)Is aggravated by administration of glucocorticoids . (

(c) Is made less by irradiation of the lymphoid tissue. (

(d)Is due to a decrease in the number of circulating lymphocytes (

22.During inspiration:

(a) lung expansion is assisted by the surface tension forces in the alveoli.()

(b) lung expansion begins when intrapleural pressure falls below atmospheric ()

(c) lung expansion ends when the intrapulmonary pressure falls to atmospheric (

(d) the alveoli at the base of the lung are better ventilated than those at the apex

23.Compliance of the lungs is:

- (a)greater than the compliance of the lungs and the thorax together.
- (b) greater in standing than in recumbent subjects (c) about 0.1 L/cm water pressure
- (d)greater during expiration than during inspiration

24.Dead space:

- (a) removes all particles from inspired air before it reaches the alveoli (
- (b) decreases when blood catecholamine level rises.
- (c) increases during inspiration
- (d) volume equals about one third the tidal volume

25.Concerning the carriage of gasses by the blood:

- (a) a rise in PCO₂ increases the oxygen carrying capacity of blood.
- (b) more CO₂ is carried by oxyhemoglobin than reduced hemoglobin. (

(c) Hb% saturation with oxygen does not vary with the Hb content. (d) CO₂ is carried mainly in blood attached to hemoglobin

26. The peripheral chemoreceptors :

- (a) have a high blood flow per unit mass of tissue
- (b) are stimulated by any form of hypoxia
- (c) when stimulated causes an increase in arterial blood pressure
- (d) are found in the medulla region of the brain

27- During acclimatization to high altitude:

- a- Excretion of bicarbonate increases.
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2- A-What are the vaso-active substances regulating the diameter of the arterioles? Explain their functions (12 marks).

C- What is Reynold's formula? Explain its significance (8 Marks)

Sept. Exam. 2000 CAIRO UNIVERSITY

Time allowed: 130 minutes FACULTY OF MEDICINE

First Year 3/9/2000

PHYSIOLOGY

Answer the following questions:

:

1. What are the types of adrenergic receptors. Explain their actions. (13 marks)

2. Describe sequence of events that occur during neuromuscular transmission. Explain properties of neuromuscular transmission. (14 marks)

3. Describe the anticlotting mechanisms inside the body. (13 marks)

4.
 - (a) Define surfactant. Discuss its structure, functions and-causes of its deficiency.(8 marks)

 - (b) What are the types of respiratory chemoreceptors. Discuss the mechanism and effects of its stimulation. (12 marks)

5.
 - (a) Describe the normal electrocardiogram and give an account on the segments and the intervals of the normal ECG record. (10 marks)

 - (b) With the help of diagram discuss the relation between right atrial pressure and cardiac output (cardiac output curves). (10 marks)

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Time Allowed: 2 hours FACULTY OF MEDICINE

FIRST YEAR 26/05/2001

PHYSIOLOGY

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1. Describe the origin and functions of the parasympathetic outflow to the head and neck. How can these functions be blocked? (14 marks)

2. Explain the importance of the tubular system of the skeletal muscles and described the molecular mechanism of skeletal muscle contraction.(14 marks)

3.

(a) Discuss types, functions and mechanism of activation of lymphocytes in response to antigen. (16 marks)

(b) State Nernst equation. How can it be used to calculate the equilibrium potential for Na^+ and K^+ in the resting nerve? (10 marks)

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June 1999

1- What is the lining epithelium of each of the following:

a. Aorta.

b. Ureter.

c. Trachea,

d. Skin.

2- What are the specific functions of the cell coat.

3- Enumerate only the name and functions of the different. Types of T- Lymphocytes.

4- Enumerate only 4 clinical importance for chromosomal studies (for karyotyping).

5- Enumerate only the name of specific cells which are involved through the stages of development of neutrophils.

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7- Mention only the name and functions of 4 types of free connective tissue cells present in the connective tissue proper.

8- Enumerate only the types and functions of the different bone cells.

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10- Mention only 2 characteristics and 2 sites for elastic fibro-cartilage.

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June 1999

- 1- discuss the detailed structure and functions of non- granular leucocytes (leucocytic counts and development are not required)
- 2- write a detailed account on the structure of thick non hairy skin.
- 3- Give a full account of the structure of lung alveoli, alveolar cells alveolar phagocytes and blood air barrier.
- 4- Give a full account of the following:
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June/1992 Marks

All questions are to be attempted:

:

- 1- With help diagrams, give an account of:

a- force-velocity and frequency — force relationships in myocardial contractility. (8)

b- The changes in atrial and ventricular pressures and ventricular volume during the systole of the left ventricle. (9)

c- The normal arterial pulse wave. What are the pathological changes which affect its form. (8)

2-

a- Give an account of the effects of gravity on the venous system. (9)

b- Give an account of the structure and mechanism of action of pulmonary surfactants. What are they not functioning and what is

the effect of their absence? (8)

c- Define cyanosis. With help of diagrams. Explain why cyanosis may be present in some hypoxias and absent in others. (8)

3-

a- Give an account of the intrinsic pathway for thrombin formation. what are the various actions of thrombin? (8)

b- Give an account of the basis of classification of human blood into "A,B,O" groups. what is the physiological significance of

1- With help diagrams, give an account of:

a- force-velocity and frequency — force relationships in myocardial contractility. (8)

b- The changes in atrial and ventricular pressures and ventricular volume during the systole of the left ventricle. (9)

c- The normal arterial pulse wave. What are the pathological changes which affect its form. (8)

2-

a- Give an account of the effects of gravity on the venous system. (9)

b- Give an account of the structure and mechanism of action of pulmonary surfactants. What are they not functioning and what is

the effect of their absence? (8)

c- Define cyanosis. With help of diagrams. Explain why cyanosis may be present in some hypoxias and absent in others. (8)

3-

a- Give an account of the intrinsic pathway for thrombin formation. what are the various actions of thrombin? (8)

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